HOUSATONIC RIVER FLOOD CONTROL

DANBURY, CONN.

LOCAL PROTECTION

STILL RIVER, CONNECTICUT

DESIGN MEMORANDUM NO. 3

CONCRETE MATERIALS



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

MAY 1969

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DEPARTMENT OF THE ARMY

NEW ENGLAND DIVISION, CORPS OF ENGINEERS 424 TRAPELO ROAD WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:

NEDED-E

16 May 1969

SUBJECT:

Danbury Local Protection Project, Still River,

Housatonic River Basin, Connecticut, Design

Memorandum No. 3 - Concrete Materials

Chief of Engineers ATTN: ENGCW-E

There is submitted herewith for review and approval, Design Memorandum No. 3, Concrete Materials, for the Danbury Local Protection Project, Still River, Housatonic River Basin, Connecticut, in accordance with ER 1110-2-1150.

FOR THE DIVISION ENGINEER:

1 Incl (5 cys)

JOHN Wm. LESLIE

Chief, Engineering Division

FLOOD CONTROL PROJECT

DANBURY LOCAL PROTECTION PROJECT STILL RIVER HOUSATONIC RIVER BASIN CONNECTICUT

DESIGN MEMORANDUM NO. 3

CONCRETE MATERIALS

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1	Hydrology and Hydraulic Design	29 August 1968	23 October 1968
2	General Design and Site Geology	21 January 1969	•
3	Concrete Materials		
14	Embankment, Foundations and Channel Improvements	30 April 1969	
5	Structures	30 April 1969	

DANBURY LOCAL PROTECTION PROJECT DANBURY, CONNECTICUT

DESIGN MEMORANDUM NO. 3

CONCRETE MATERIALS

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DEPARTMENT OF THE ARMY NEW ENGLAND DIVISION CORPS OF ENGINEERS WALTHAM, MASSACHUSETTS

FLOOD CONTROL PROJECT

DANBURY LOCAL PROTECTION PROJECT

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MAY 1969

- 1. General. The project, located in the City of Danbury, Connecticut, will require approximately 25,000 cubic yards of concrete for construction of a U-shaped channel structure and box culverts. The concrete will be subjected to severe climatic conditions with alternate cycles of freezing and thawing during the winter months. Therefore, air entrained concrete is considered mandatory to provide the required durability of the structures. The structures which will be subjected to low velocity flows of water will require only regular quality structural concrete. Considering the moderately small quantity of concrete required, the specifications will provide for use of a semi-automatic control concrete plant with the concrete mixed by a stationary, truck or paving mixer.
- 2. Cementing Materials. The size of the monoliths will not result in excessive thermal stresses nor does the location of the structure involve sulfate exposure. Therefore, the use of Type I portland cement will satisfy the chemical and physical cement requirements for this project. It is not considered economically feasible to use pozzolan or special cements for this project because of the small quantity of concrete required. No special investigations of portland cements have been conducted because the cement used in this area is usually supplied by one of six cement mills located in the New York Hudson River Valley or from one of eight mills located in the Pennsylvania Lehigh Valley. Five of the six mills located in the New York Hudson River Valley do not manufacture Type I portland cement but do manufacture Type II. Therefore, Type Ior Type II portland cement will be specified.

3. Aggregates.

a. Field Investigation. In view of the small quantity of concrete required for the structures, the concrete aggregate investigations were confined to established commercial companies producing fine and/or coarse aggregate and these companies will be referred to hereinafter as the aggregate source. A field reconnaissance (June 1968) was performed by an engineer-geologist team to locate and ascertain the availability of sources of concrete aggregates within a fifteen mile radius of the project site. There are nine commercial sources of processed natural sand and gravel within a fifteen mile radius of the project site. One source of processed crushed quarry stone is located fifty miles from the site and has facilities for shipping aggregate by rail. Table I lists the location, plant capacity, and haul distance to the project site of each source of aggregate checked during the field reconnaissance.

TABLE I

Aggregate Source and Location	Plant Capacity (Tons per Hour)	Ḥaul Distance (Miles)
B. J. Dolan, Inc. Bethel, Connecticut	100	2
Bethel Sand & Gravel Co. Bethel, Connecticut	60	4 .
Danbury Sand & Gravel Co. Danbury, Connecticut	130	4
Federal Sand & Gravel Co. Brookfield, Connecticut	100	4
Brookfield Sand & Gravel, Inc Brookfield, Connecticut	. 120	7
Brewster Sand & Stone Corp. Brewster, Connecticut	70	7
Sega Sand & Gravel Co. New Milford, Connecticut	150	11
Loma Sand & Gravel, Inc. Newtown, Connecticut	100	12
D'Addario Sand & Gravel Co. Newtown, Connecticut	200	15
New Haven Trap Rock Co.(1) Wallingford, Connecticut	500	50

⁽¹⁾ Produce Crushed Quarry Stone coarse aggregate only.

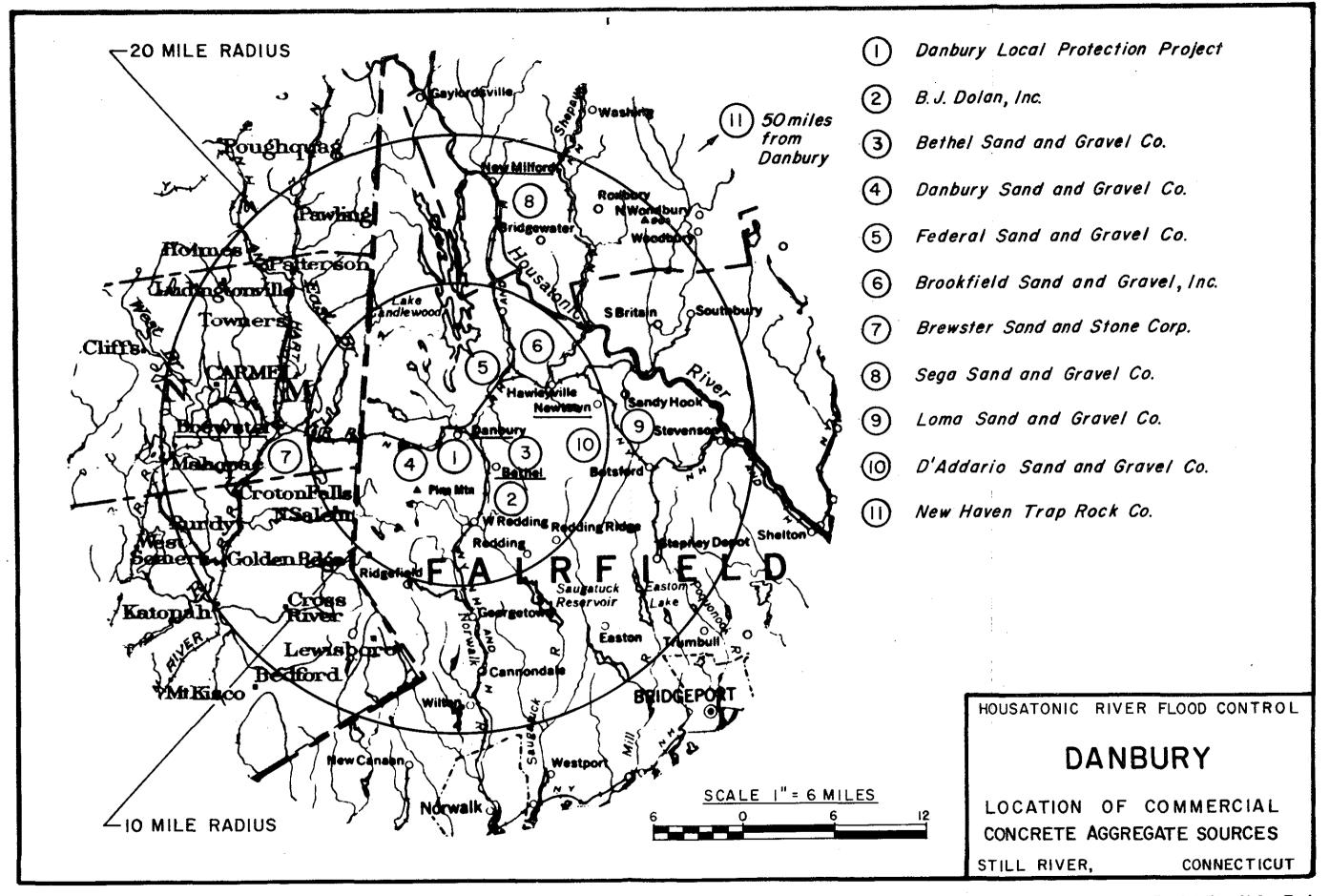
The locations of the project site and commercial sources of aggregates listed above are shown on Plate No. 3-1. Considering the quantity of concrete required, it is presumed that concrete will be obtained for the project from one of the ready-mix concrete suppliers that deliver in Danbury. Danbury Sand and Gravel Company does not supply concrete aggregate to a ready-mix concrete plant and its aggregate material is primarily used in the manufacture of concrete blocks. Bethel Sand and Gravel Company and the Sega Sand and Gravel Company supplies aggregates to Sega Concrete Company's plant. However, the Sega Concrete Company is non-union and is not considered as a potential concrete supplier for this project. Brookfield Sand and Gravel Company supplies aggregates to Telesco Mason Supply Company's concrete plant located in Brookfield, Connecticut. This concrete plant is not normally operated and the primary use of the aggregates from Brookfield Sand and Gravel Company is for use in bituminous concrete. Brewster Sand and Stone Corporation operates a concrete plant adjacent to its aggregate plant. However, due to a higher wage scale and longer haul distance, this concrete plant is not considered economically competitive with the concrete plants located in Danbury and Bethel, Connecticut. Loma Sand and Gravel Company supplies aggregates to Monroe Ready-Mix Concrete Company's plant located in Newtown, Connecticut. The Monroe Ready-Mix Concrete Company is non-union and is not considered a potential concrete supplier for this project. The Federal Sand Gravel Company normally supplies aggregates to Telesco Mason Supply Company's concrete plant in Danbury. B. J. Dolan, Incorporated utilizes its aggregates in its concrete plant located in Bethel. D'Addario Sand and Gravel Company supplies aggregates to its concrete plant in Danbury. New Haven Trap Rock Company has supplied coarse aggregate by rail to the concrete plants of the Telesco Mason Supply Company and the D'Addario Concrete Service Company which are both located in Danbury, for construction of concrete structures and rigid pavement of interstate highway work in the Danbury area. The aggregates produced by the plants of the Federal Sand and Gravel Company, B. J. Dolan, Incorporated and D'Addario Sand and Gravel Company were selected for evaluation testing since these companies are considered to have the best potential for supplying aggregates to the project. Aggregates produced by the aggregate plant of the New Haven Trap Rock Company has been previously tested and approved for civil works construction. Photographs of the working faces of the quarry of New

Haven Trap Rock Company are shown on Plate No. 3-8. The maximum size of coarse aggregates commercially available is 1-1/2 inches. Because of the placing condition in relatively narrow, heavily reinforced concrete walls and slabs, an aggregate size larger than 1-1/2 inches is not being considered.

- b. Tested Sources and Estimated Prices. The sources of aggregate tested and estimated delivered prices to the project site of these aggregates, based on the quoted plant prices and Connecticut Department of Public Utilities minimum trucking rates, which are currently fifty-five cents per ton for the first four miles and seven cents per ton for each additional mile are as follows:
- (1) B. J. Dolan, Incorporated. Quoted plant prices are \$2.75 per ton for gravel and \$1.35 per ton for concrete sand. The delivered prices to the site will be \$3.35 per ton for gravel and \$1.95 per ton for concrete sand.
- (2) Federal Sand and Gravel Company. Quoted plant prices are \$2.70 to \$3.00 per ton for gravel, depending on size group; and \$1.60 per ton for concrete sand. The delivered prices to the site will average \$3.60 per ton for gravel and \$2.05 per ton for concrete sand.
- (3) D'Addario Sand and Gravel Company. Quoted plant prices are \$3.00 to \$4.00 per ton for gravel, depending on size group and \$2.00 per ton for concrete sand. The delivered prices to the site will average \$4.95 per ton for gravel and \$3.45 per ton for concrete sand.
- (4) New Haven Trap Rock Company. Quoted plant prices are \$2.05 to \$3.20 per ton for crushed stone, depending on size group. The delivered price by rail will average \$3.45 per ton for crushed stone.
- c. Aggregate Tests. Results of aggregate tests are summarized on Plates Nos. 3-2 through 3-4. Test data for coarse aggregates produced by the New Haven Trap Rock Company are reported in Technical Memorandum No. 6-370 "Test Data Concrete Aggregate in Continental United States", Volume 5, Latitude 41°N, Longitude 72°W Index No. 6. The petrographic examination of a current sample of aggregate from this source indicates that the material is now identical to that previously tested.

- d. Concrete Making Properties of Aggregates. The water cement ratio and cement factor versus compressive strength curves developed by utilizing concrete aggregates from the sources selected for evaluation are shown on Plates Nos. 3-5 through 3-7 for all sources except New Haven Trap Rock Company.
- e. Service Records. The aggregates from the sources selected for evaluation testing have been used in concrete for a number of Federal, State and local projects. B. J. Dolan, Incorporated has used sand and gravel aggregates regularly from its concrete plant for local and state building construction. Federal Sand and Gravel Company has supplied sand and gravel aggregates regularly to Tedesco Mason Supply Company and Concrete plant for concrete which has been used in construction of local and state buildings and state highway bridges. D'Addario Sand and Gravel Company has supplied sand and gravel aggregates regularly to its concrete plants located in Bridgeport and Danbury, Connecticut and concrete from these plants has been used for local building construction, including urban renewal, floodwalls on the Still River in Danbury and for bridge structures on the Connecticut Turnpike in Bridgeport, Connecticut. The crushed stone supplied from New Haven Trap Rock Company plant has been used for many years in the production of concrete pavements and structures in the States of Connecticut, Rhode Island and New York for projects under control of the New York Port Authority and in Corps of Engineers civil works and military projects, including airfield pavements. The performance of aggregates from all of the sources is considered satisfactory, although it must be noted that the period of record is less than ten years, except for aggregate produced by the New Haven Trap Rock Company which has a fifty year record of service and is considered excellent.
- 4. Water. It is assumed that water for both mixing and curing will be obtained from a city or town water supply and, since the exact sources cannot be predetermined, tests have not been performed. Sources of water proposed by the contractor will be tested prior to use.
- 5. Sources of Concrete. There are six suppliers of ready-mixed concrete with manual control transit-mix type concrete plants located within a fifteen mile haul distance of the project site. Telesco Mason Supply Company operates plants in Danbury and Brookfield, Connecticut.

- B. J. Dolan, Incorporated operates a plant in Bethel, Connecticut. D'Addario Concrete and Asphalt Service Incorporated operates a plant in Danbury, Connecticut. Sega Concrete Company operates plants in Bethel and New Milford, Connecticut. Brewster Sand and Stone Corporation operates a plant in Brewster, New York. Monroe Ready-Mix Concrete Company operates a plant in Newtown, Connecticut.
- 6. Recommendations and Conclusions. Based on the data presented herein, it is considered that concrete aggregates from any of the four sources tested are acceptable and it is recommended that fine aggregate from three sources and coarse aggregates from these four sources, as listed, be approved.

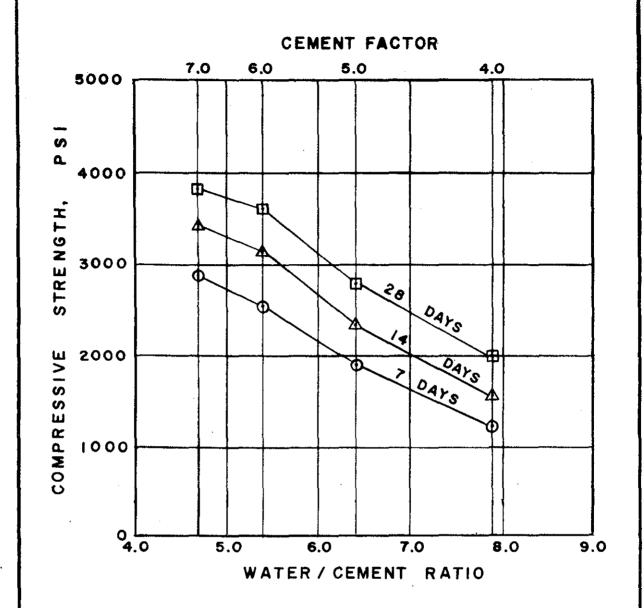


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NO 4 NO.8 NO.16 NO.30 NO.50 NO.200 - 200(a) F.M(EX) a) CRD-C MORTAR - B. LOW-ALI HIGH-AL SOUNDNESS FINE AG FIN	AR EXPANSIVE CEMENT IN CONTROL DO CO. PHIC DATA POST TO CO. CATEOUR	CRETE (Color tely us roc	1.7 0.8 6.57 104 100F, 70 70 No. 270 No. 280-C	99 93 77 5h 27 8 2.0 2.2 2.62 0 EQUI 0 EQUI 40, 114 The grani	MORTAR- TYPE_I LINEAR LINEAR MORTAR C 123): VALENT: VALENT: COARSE AG COA	MAKING I CEM THERMAI ROCK 3 MO. GG Dol GG 3 aggr cock ty sic ro is a r 10%	PROPERTIE ENT, RATE EXPANSI TYPE FINE AG 6 MO. Lan cegate pes, 1 granit	S (CAD-C) 7 CON XIOTS PARE PARE PARE PARE PARE PARE PARE PARE	Re, m Re, m C 189 DAYS, 1 OEG. F. ALLEL 12 MO.	ACROSS ACROSS 3 MO. DFE 300 DFE 300 ACROSS ACROS	coarse 6 Mg	Acception of the state of the s	EGATE MO	mpos chis
NO 4 NO.8 NO.16 NO.30 NO.50 NO.200 -200(a) F.M(b) a) CRD-C: MORTAR - B. LOW-ALI HIGH-AL SOUNDNESS FINE AG FINE AG FINE AG PET ROGRAF Of app	AR EXPANSIVE CEMENT IN CONTROL DO CO. PHIC DATA POST TO CO. CATEOUR	CRETE (Color tely us roc	1.7 0.8 6.57 104 100F, 70 70 No. 270 No. 280-C	99 93 77 5h 27 8 2.0 2.2 2.62 0 EQUI 0 EQUI 40, 114 The grani	MORTAR- TYPE_I LINEAR LINEAR MORTAR C 123): VALENT: VALENT: COARSE AG COA	MAKING I CEM THERMAI ROCK 3 MO. GG Dol GG 3 aggr cock ty sic ro is a r 10%	PROPERTIE ENT, RATE EXPANSI TYPE FINE AG 6 MO. Lan cegate pes, 1 granit	S (CAD-C) 7 CON XIOTS PARE PARE PARE PARE PARE PARE PARE PARE	Re, m Re, m C 189 DAYS, 1 OEG. F. ALLEL 12 MO.	ACROSS ACROSS 3 MO. DFE 300 DFE 300 ACROSS ACROS	coarse 6 Mg	Acception of the state of the s	EGATE MO	mpos chis
NO 4 NO 8 NO 16 NO 30 NO 50 NO 500 NO 200 - 200 F.MCD - 200 AORTAR - B. LOW-ALI HIGH-AL SOUNDNESS FINE AG FINE	AR EXPANSIVE CEMENT IN CONTROL DO CO. PHIC DATA POST TO CO. CATEOUR	CRETE (Color tely us roc	1.7 0.8 6.57 104 100F, 70 70 No. 270 No. 280-C	99 93 77 5h 27 8 2.0 2.2 2.62 0 EQUI 0 EQUI 40, 114 The grani	MORTAR- TYPE_I LINEAR LINEAR MORTAR C 123): VALENT: VALENT: COARSE AG COA	MAKING I CEM THERMAI ROCK 3 MO. GG Dol GG 3 aggr cock ty sic ro is a r 10%	PROPERTIE ENT, RATE EXPANSI TYPE FINE AG 6 MO. Lan cegate pes, 1 granit	S (CAD-C) 7 CON XIOTS PARE PARE PARE PARE PARE PARE PARE PARE	Re, m Re, m C 189 DAYS, 1 OEG. F. ALLEL 12 MO.	ACROSS ACROSS 3 MO. DFE 300 DFE 300 ACROSS ACROS	coarse 6 Mg	Acception of the state of the s	EGATE MO	mpos chis

												<u></u>			
STATE:	Com	IND	EX NO.				REGAT					LABOR	ator	<u> </u>	
	LION		IG.:		W	DATA	SHEE	T DA	TE:	A	ugust	1968			
LAB. SYM	ABOL NO.: 7	<u>3-16l</u>	-1 t	hrn	3			TYPE O	F MA	TERIAL	Proc.	Sand	& Ç	TAYE	1
LOCATION	N: Sand	Cut I	load.	Bro	okfie.	ld. Co	nnecti	cut							
PRODUCE	R Feder	al Sa	nd a	nd (ravel	Compa	DV.								
SAMPLED	BY: NED	A	Car	osel	la .										
TESTED						ion Pr	otect								
PROCESS	ING BEFORE	TESTING:	Cr	ushi	ng S	izing	and Wa	shin	g by	v Pr	oducer				
								<u> </u>							
GEOLOGI	CAL FORMATIO	N AND	AGE:	Ter	race P	leisto	cene	Wisc	ons	in)					
			_												
GRADING	G (CRD-C 103)(CUM. 1	70 PASS	ING):	I	TE	ST RE	SULTS	;] -				i /1.n	70=	FINE
SIZÉ		2 /1.8	2 /Qn	FINE	L							-	3/4"	3/8*	AGG.
3,26	<u> </u>	3/4"	3/8"	AGG.	BULK SP.	GR , SAT	SURF DRY	(CRD-C	107,	108):		1	2.63	2.64	2.6
SIN.	1	1			ABSORPT	IÓN, PER C	ENT (CRD	-C 107,	108):				L.O	1.6	1.2
5IN.				•	ORGANIC	IMPURITIE	s, FIG. NO). (CRD -	C 121	i):					7
4 IN.					SOFT PA	RTICLES,	PER CENT	(CRD-	130):			l.		
3 IN.		 			PER CEN	T LIGHTE	R THAN S	P. GR	(CA	D-C 12	9):	,			
2 IN.					PER CEN	T FLAT A	NO ELONG	TED (CI	RD-C	119,12	0):	2	2		
2 IN.					WEIGHTE	D AV. % LO	055, 5 CYC	. MgSO4	(CRD	- C II	5)		3		13
1 1N.		1		:	ABRASION	LOSS (L	A.), 70,	(CRD-C	117):	mgn			13]	
LIN.		100	·	_	UNIT WT	., LB/CU I	T (CRD-	0 106):				1	LOL	101	310
₹IN.		87			CLAY LU	MPS, %	CRD-C I	8):							
IN.			100			D LIGNITE): .						
in.	<u> </u>	K	99			HEAT, BT	·			124):					<u> </u>
NO. 4	 			100		TY WITH					4/L				\vdash
NO. 8		1	10	87	1				- 6	Re,mh					
NO, 16		+	7	68	MORTAR-	MAKING I	PROPERTIE	S (CRE	- C I	16)	L	LL			
NO. 30	 	†		h6	TYPE	II CEME	NT, RATI	7	_DAYS	s 1	<u>553</u>	<u> 28</u>)AY5,	146	%
NO. 50	 	+	-	23							CRD-C 12				
NO. 100		-		7		ROCK				.EL		<u>,</u>	T	AVERA	√G€
NO.200	 	2 2	1.8	9 0	d		· · · · · · ·					 	- 		
- 200 ^{(*}	/	0.8	7 7	7 0			·					 	一.		—
F. M. (b.			5.5		1							 			
	-C 105 (b) C			K. D. D.	MORTA	R:									
	· 	 			<u> </u>		FINE AG	GREGAT	E		1	COARSE	AGGRE	GATE	
MORTAR -	-BAR EXPANSIO	ON AT IC	00F, 70	(CRD-	-C 123):	3 MO.	6 MO.	9 MO	. 12	MO.	3 MO.	6 MO.	9	MO. 1	2 MO.
LOW-	ALK, CEMENT:		70 Na;	O EQU	VALENT:										
нісн-	ALK, CEMENT:		7a Naz	O EQU	VALENT:										
SOUNDN	ESS IN CONCE	ETE (CI	RD-C	10, 114):		•					F&T	HW-	-CD +	ID~CW
	AGG. Feder					cc: Fe	Teref				DFE 300	56			
FINE					COARSE A			···			DF E 300		1		
PE1 ROGE	RAPHIC DATA	(CRD-C	(27):	min o	000**			4-	-	4					
posed rock fine 10% g	types, 6 aggregat ranitic , 3% fel	oxima % sch e is rock	tely ist a na type	73% und tura s, l	grani 2% mis il sand .0% cal	itic rescellar i and : icareo	ock ty neous is com us roc	pes, with pose	119 6% 1 of	qu high	artzite hly wea % quart	e, 8% athere	cal ed. I qu	care The artz:	ous ite,
REMARKS	<u> </u>	·. · · · · · · · · · · · · · · · · · ·	<u>-</u>			,	<u> </u>	-		 					
			•												

STATE: CO	27271.0	IND	EX NO.	A 44		AGG	REGAT	ε	TESTE	BY:	NED L	abora	tory		
LAT.: 4	oN		ic. 7		·····	4	SHEE	_	DATE:		Augus				
LAB. SYMBI	BL NO.: 76	-163	-1 ti	1171	3				OF M	ATERIAL	Sand	and G	rave.	L	
LOCATION:						on. Co				······					
LOCATION: Button Shop Road, Newton, Conn.															
PRODUCER: D'Addario Sand and Gravel Company															
2 remerite parm star area of the same same same same same same same sam															
SAMPLED BY: NED - A. Carosella															
TESTED FOR: Danbury Local Protection Project															
USED AT															
PROCESSING BEFORE TESTING Crushing, Washing and Sizing by Producer															
GEOLOGICAL FORMATION AND AGE. Terrace Pleistocene (Wisconsin)															
						<u> </u>	<u>ocorre</u>	1114	300L	omit.				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
GRADING (CRD-C 103)(CUM. 76 PASSING) TEST RESULTS FINE															
HZE /	1	1		FINE	1		3, 76	300	لث	-	1) }	3/4"	3 \81	AGG
SIEVE		3/4"	2 /RH		BULK SP	GR ,SAT	SURF DRY	(CRD	-C 10	7.108):			2.69		
6 IN	····	1/4	9 /			KON, PER C							1.1		
51N.		<u> </u>	-			IMPURITI									
41N.			-			RTICLES,						1	2		1
3IN.						LIGHTE				RD-C 12	9):	1	<u> </u>		+==
2 1N.		1		÷	 	7 FLAT A						1	5		+
2 JN						D AV. % L		·····		- -		· · · · ·	6		8
I ± IN		 	-			1 LOSS (1						**	32		-12-
		100				., LB/CU							96	00	112
ž IN.		83				MP3, %			· · · · · ·			 	20		
∳IN		31	100								} -	 			
21N.	 	8	93		SPECIFIC	HEAT, BT	UZLBZDEG	. F. (C	80 - C	(24):		 	-	·	+
NO 4		1 .		700		ITY WITH					1/1				
NO.8			8	82	1					Rc, mi		 			+
NO.16	 	 	् ह	60	MORTAR	MAKING	PROPERTI	s (ci	RD - C					L	<u></u>
NO. 30		 		38							6 -	28	DAYS	121	
NO 50		-		21							CRD-C 12				
NO 100		1		로		ROCK		1	PARAL		ACROSS	ON		AVER	ACE .
NO.200		1,1	7.7	0.9	 			+		+					
- 200 ^(a)		1.0		0.9			· · ·					+	 		
F.M(b)			5.44				· · · · · · · · · · · · · · · · · · ·					 			
e) CRD-C	105 (b) C	RD-C 1		C.9.74	MORTA	R:						<u> </u>			
							FINE AC	GREG	ATE .		ŀ	COARSE	AGGRE	GATE	
IORTAR - BA	AR EXPANSIO	ON AT IC	00F, 70	(CRD-	C (23):	3 MO.	6 MO.	9 4		2 MQ.	3 MO.	6 MO.			12 MO
LOW-AL	K, CEMENTI.		70 Na.	O EQUI	VALENT:	 					—			1	<u> </u>
	K.CEMENT:				VALENT:		,	 -			 	ļ	+	~	
	IN CONCR					 -	L	.			 	F & T.	HW-	CD	HD - CV
FINE AG		dario			COARSE A	GG: 71	Addar	<u> </u>			DFE 300	69	1		
FINE AG		التعويد			COARSE A						DF E 300	<u> </u>	1		
	HIC DATA	(CRD-C	1271:				Maret -	10	9 70	4		ro71 ar	<u>ــــــــــــــــــــــــــــــــــــ</u>		
മാടക്ക	of appr	oxi ma	tels	- 679	Comen	itie i	nck t	TO TO	- T	ion a	n Arak	AND	10 16	1. GU	Man .
11% sc	hist an	1 18	heei	C 74	ick tv	nes wi	th he	hia	h 1	<i>Jp</i> yu	hamad hamad	una igi Mhe	. 41.	20 0) ~
greeat	e is a	natiii	na Terr	and	and i	S CUMM	നയകുന്ന	ع-بن ه ۱۴	171734	vaen emirr	teller A	7 6		# 0.	್ಷ ಇಗ್ರಾನ
ouartz	, 19% g	ranii	ic r	bok	types	_ C Ø	ich1=+		PAT	yene Punn		appo QU hpe4a	101.02 100-	.}r.∪=	and Marce
and Ra	miscel	Jener))]	- U	A) hen	ع مرر و	WITE O	, ,,	, 141	raspa	1 6 K	ng2 TC	, 100	J. J.	y heg
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			- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10			 -	·				<u> </u>		·		
REMARKS:				e e e e e e e e e e e e e e e e e e e						٠.					1 :
	1	•		3-1	1										

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B. J. DOLAN SAND & GRAVEL CO. BETHEL, CONN.

NOTE

CONCRETE WITH I" MAXIMUM SIZE COARSE AGGREGATE, 3-INCH SLUMP, 6.0% ENTRAINED AIR, TYPE II PORTLAND CEMENT.

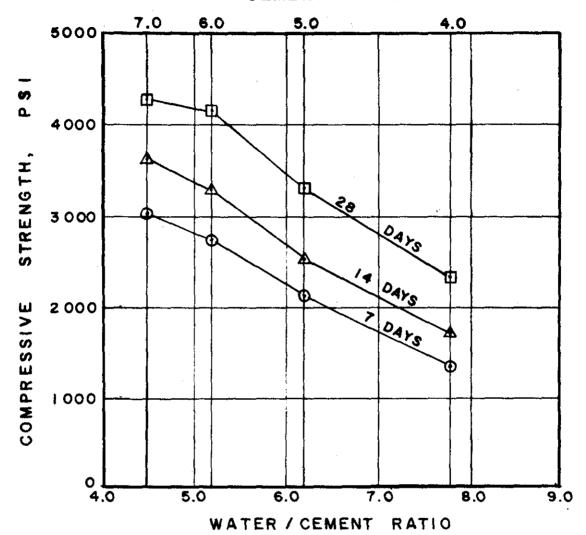
HOUSATONIC RIVER FLOOD CONTROL

DANBURY

PROPERTIES

STILL RIVER, CONNECTICUT





FEDERAL SAND & GRAVEL CO.

BROOKFIELD, CONN.

NOTE

CONCRETE WITH 3/4" MAXIMUM SIZE COARSE AGGREGATE, 3-INCH SLUMP, 6.0% ENTRAINED AIR, TYPE II PORTLAND CEMENT.

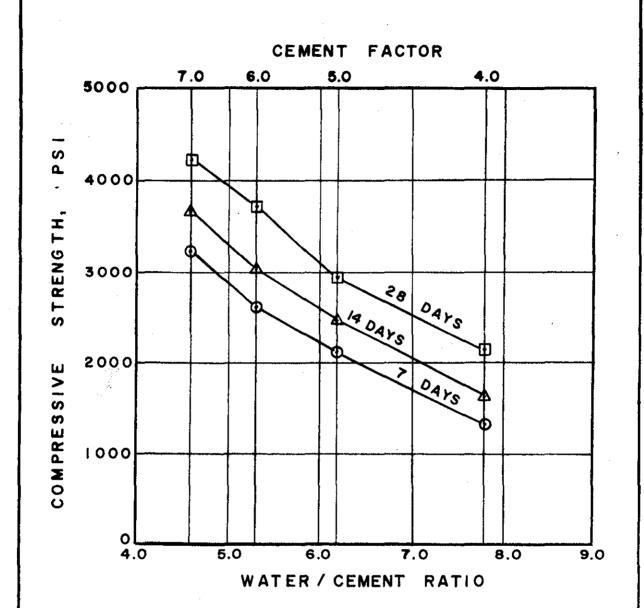
HOUSATONIC RIVER FLOOD CONTROL

DAN BURY

CONCRETE MAKING PROPERTIES

STILL RIVER, CONNECTICUT

PLATE NO. 3-6



D'ADDARIO SAND & GRAVEL CO. NEWTOWN, CONN.

NOTE

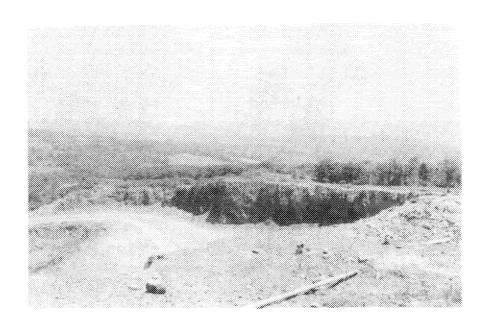
CONCRETE WITH 3/4" MAXIMUM SIZE COARSE AGGREGATE, 3-INCH SLUMP, 6.0 % ENTRAINED AIR, TYPE II PORTLAND CEMENT.

HOUSATONIC RIVER FLOOD CONTROL

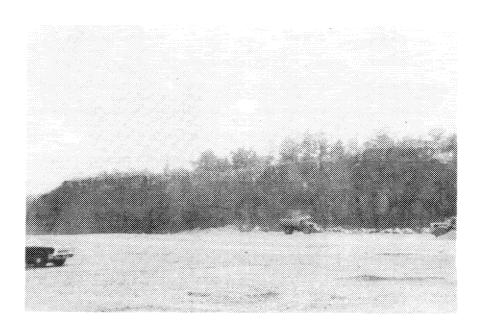
DANBURY

CONCRETE MAKING PROPERTIES

STILL RIVER, CONNECTICUT



New Haven Trap Rock Company Wallingford, Connecticut Quarry face 1500 feet long



New Haven Trap Rock Company Wallingford, Connecticut Quarry face 300 feet high